

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1 – 20 (cancelled).

21. (new) A drive unit, comprising:

two sub driven elements;

a pair of actuator units for respectively driving the two sub driven elements, each of the pair of actuator units including at least one actuator, and each actuator comprising an electro-mechanical converting element which applies driving force to the corresponding sub driven element when electric power is applied thereto;

a main driven element driven by the pair of actuator units via the two sub driven elements; and

control means for controlling the pair of actuator units so that the main driven element is driven in one of a plurality of drive modes,

wherein the plurality of drive modes includes a differential mode in which the pair of actuator units carry out a differential motion with each other to drive the main driven element via the two sub driven elements.

22. The drive unit as claimed in claim 21, wherein the differential mode includes at least one of a first differential motion mode in which the pair of actuator units respectively have drive speeds that are different from each other to drive the main driven element in a same direction, a second differential motion mode in which one of

the pair of actuator units is driven in the direction reverse to the drive direction of the main driven element, and a third differential motion mode in which one of the pair of actuator units is in a suspending state.

23. The drive unit as claimed in claim 21, wherein the control means drives the pair of actuator units in the differential mode in order to stop the main driven element.

24. The drive unit as claimed in claim 21, wherein the main driven element and the two sub driven elements constitute a decelerator.

25. The drive unit as claimed in claim 21, further comprising rotational amount detecting means for detecting the rotational amount of the main driven element, wherein the control means controls the pair of actuator units in response to the rotational amount of the main driven element detected by the rotational amount detecting means.

26. The drive unit as claimed in claim 25, wherein the rotational amount detecting means include a rotary encoder.

27. The drive unit as claimed in claim 21, wherein each of the two sub driven elements has a shaft for rotation and the at least one actuator in each of the pair of actuator units includes a plurality of actuators, wherein the plurality of actuators are arranged along the shaft of the corresponding sub driven element.

28. The driven unit as claimed in claim 21, wherein the electro-mechanical converting element is a vibrating element containing a piezoelectric material.
29. An operating apparatus, comprising:
the drive unit of claim 21; and
a controlled element driven by the drive unit in a controlled manner.
30. The operating apparatus as claimed in claim 29, wherein the controlled element includes a robot arm body.